Another Remark on the Planarity of the Shuffle-Exchange Network of Sizes 16 and 32

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In [UCN8] Rudolph presented an example of a 32 processor shuffle-exchange network in which 6 connections pass through the area occupied by another processor. In this note we reduce the number of intersections from 6 to 4. Since none of the exchange connections pass through a processor, the exchange operation can be performed in one cycle. The shuffle operation requires two cycles.

L. Rudolph informs me that he has also reduced the number of intersections to 4.

Reference

[UCN8] Larry Rudolph, "A Remark on the Planarity of the Shuffle-Exchange Network of Sizes 16 and 32," Ultracomputer Note #8, Courant Institute, N.Y.U., 1980.

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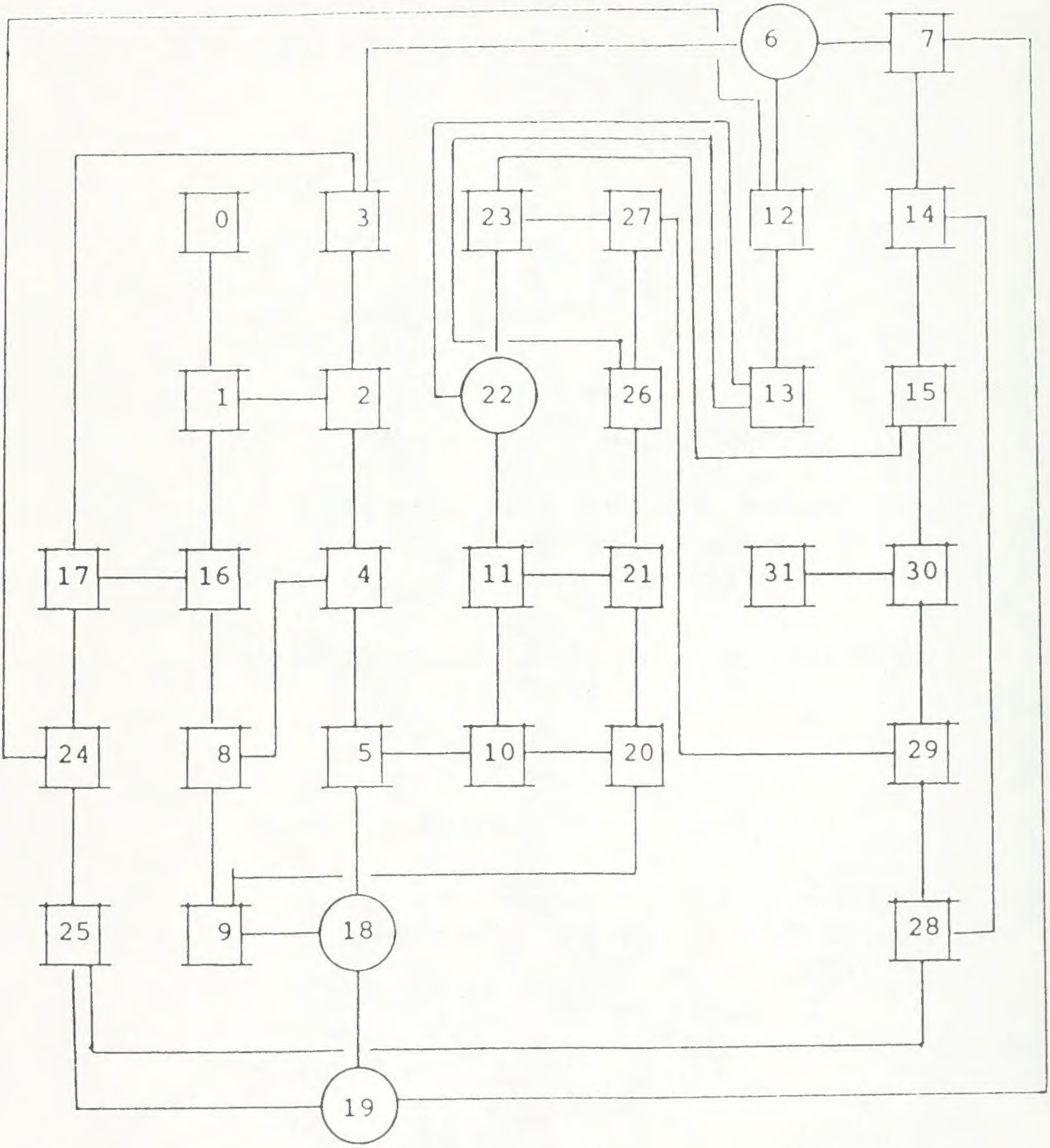

The shuffle line from 28 to 25 passes through 19.
The shuffle line from 12 to 24 passes through 6.
The shuffle line from 20 to 9 passes through 18.
The shuffle line from 13 to 26 passes through 22.